

The quality hurdle: Towards a development model that is no longer
industry-centric

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1. The new dualism

Structural change—the shift out of subsistence agriculture into manufacturing—was supposed to result in high-quality, high-productivity jobs and trigger a self-reinforcing process of capability building, ultimately reflected in economy-wide productivity gains. Instead, deep changes in the use of technology and the pattern of globalization have led to an involution, particularly in Africa and Latin America. Along with a modern sector, competitive in world markets and at home with the practices of the knowledge economy, development has produced large, low-productivity, low-quality and low-wage manufacturing, agriculture and service sectors operating beyond the regulatory and tax authority of the state, and often without the obligations and protections of private law. The traditional hope that the growth of an industrial modern sector would absorb this informal sector together with the subsistence economy has proved misplaced. Industry is no longer the high road to development.

In the absence of alternatives, in many parts of the developing world dualism has been recreated, not overcome. In the rich countries too, there is a growing divide between a segment of advanced production that thrives on the uncertainty of the knowledge economy and a less productive segment, using outdated methods and unskilled labor, that neither contributes to nor benefits from innovation. The new dualism threatens the maintenance as much as the attainment of broad prosperity.

The recreation of dualism is also disconcerting to recent currents of development thinking that set aside large questions of structural transformation to focus on the conditions under which individuals and families do, and do not, find a path to incremental, self-reinforcing accumulation: poor economics. For the explosion of informality suggests that often the way out of dire poverty does not lead either to personal prosperity or economy-wide transformation. Even where there are no poverty traps, the road to development can be, for far too many and for countries as a whole, unpassable.

The sheer extent of the new informality is arresting. In countries like Peru, 75 percent of the work force is employed in the informal sector. The share of informal labor has remained stubbornly high despite more than a quarter century of growth averaging 5 percent per year.¹ In Mexico, according to a study by the McKinsey Global Institute covering the period from 1999 to 2009, the modern sector of large firms (employing 500 or more workers) increased productivity by 5.8 percent annually. It coexists with a large, mostly informal, sector of small and micro-enterprises (employing 10 workers or less) in which productivity *decreased* by 6.5 percent annually. In the decade covered by the study the ratio of labor productivity between the large and small firm sectors more than tripled, from 3.5 to 11; the share of workers employed in the informal sector increased from 39 percent to 42 percent and the labor share in the modern sector, having grown

¹ Peru is an outlier in the sense that its informality level is easily 20 pp. above others at a comparable level of per capita income and development; but there is nothing unique about its circumstances.

earlier, stagnated.² Development has gone into reverse, leaving the theories of structural change—and growth models more generally—at a loss.

Although the new focus on dualism usefully highlights the overall failures of development by industrialization, and poor economics clarifies understanding of measures to support individual accumulation, both obscure a crucial potential of growth: informal firms in manufacturing, agricultural and services sectors with many, but not all, of the capacities needed to join domestic and international supply chains. With support from other small producers like themselves, buyers, or the state these firms can close the gap between the modern and informal sectors, transforming the latter piecemeal from within.

Firms in this intermediate position are the focus of this paper. These in-between firms are neither fully traditional nor modern under any of the current understandings of those terms. They are often within striking distance of the modern economy, yet unable to reach it on their own. They operate beyond the level of subsistence, using materials and methods more likely to trickle down—or be cast off—from more advanced enterprises rather than inherited from tradition. Yet their accumulated capacities do not equip them to compete with dynamic firms in the vanguard of the economy. Even if they have met all formal regulatory and tax obligations (and most have not), they must still satisfy their customers' requirements for reliability and quality by learning to identify and reduce—if not eliminate—local causes of disruption. And since the requirements for entry gradually but inexorably increase, and solutions to current problems often reveal new ones, new entrants must demonstrate the capacity not for one-time adjustment, but for continuous improvement just to maintain a place on the bottom rung of a modern supply chain. Firms that aim to climb higher must do much more.³

High-potential firms or farms deciding whether to trade the freedom of maneuver characteristic of the informal sector for the combination of disciplines and opportunities associated with participation in the modern sector or knowledge economy via supply chains face, in other terms, a quality hurdle: a bundle of requirements to improve, stabilize and expand operations that must be met both by mastering new disciplines and routines and deploying additional resources. Simply relaxing resource constraints—for example, through increased access to credit—is insufficient. Capacity building, in the sense of extending the range and increasing the difficulty of the tasks the firm can reliably accomplish, is necessary as well. Because capacity building requires learning

² These results are consistent with Levy's results (2018, p. 130) from Mexico: between 1998 and 2003 there was employment growth of 115 percent in the informal sector and 6 percent in the formal economy. And between 1998 and 2013, while formal employment grew around 50 percent, informal employment doubled.

³ It would be more accurate to speak of a quality ladder than a quality hurdle. Firms seeking to move up in the hierarchy of the supply chain by taking increasingly demanding tasks must master a sequence of skills—the steps in the ladder—. Success in earlier stages does not assure success in later ones. But the initial decision to trade the autonomy of operation in the informal sector for the lucrative constraints of the modern supply chain seems more nearly irreversible than later decisions to climb the next rung. We will say that firms presented with the first, fateful choice face a quality hurdle.

new general principles (and how to adapt them to local contexts), and learning requires various forms of sociability with teachers and co-learners, firms seldom clear the quality hurdle as the isolated, individual actors they are taken to be in neo-dualist accounts (and in development economics more generally). Success typically depends on collaboration among producers (in associations or cooperatives) and between these groupings and buyers or sellers.

The focus here is especially on agriculture and related activities such as aquaculture, silviculture, or animal husbandry. Taken together these form an important avenue for economic advance given the blockage of industrialization strategies. We do not attempt to estimate the weight of such high potential, informal sector firms; nor do we offer any rigorous assessment of the costs and benefits of cooperative mastery of the quality hurdle. Rather, we read the recent literature on dualism and structural change against the grain, supplement it with our field work in Peruvian agriculture, and connect it to current work in agricultural economics, to show that high-potential, informal-sector firms are much more prevalent than current theories of development lead us to expect, and face problems which these theories usually do not contemplate at all.

Though we stop short of discussing policy alternatives here, our ultimate goal is to contribute to the gathering discussion of how economies, developing and developed, can be organized to overcome dualism by broadly diffusing the practices of the dynamic economy. Showing that key parts of the informal sector are on the verge of mastering those practices; that they are held back by the risks of proceeding rather than any intrinsic limit to the development of their capacities; that in this sense the sectors are closer to each other—and the gap between them easier to bridge than usually thought—is a first step.

In the next part we review explanations for the persistence and expansion of informality that focus on perverse regulation and show why these have been, in the main, rejected in favor of neo-dualist accounts emphasizing perversities in the nature of markets or technology, often in combination with deficiencies in the endowments of firms. In Part 3 we show that neo-dualism, for its part, exaggerates the duality of developing economies, overlooking important evidence of the range of firms above the subsistence level but still within the informal economy as generally defined. We show that, in attending often to the situation of firms and individuals at (or just above) subsistence, these theories have ignored the distinctive problems and opportunities of firms that are more capable yet still not qualified for participation in dynamic supply chains: firms facing the quality hurdle.

In Part 4 we provide a case study of Peruvian smallholders growing fresh produce for sale to exporters to illustrate both that small producers can clear this hurdle but also how—in the near absence of public support—they must rely on assistance from their customers and the socialization of costs of learning through association to do so. The current literature in agricultural economics, well aware of the distinctive problems of developing economies but inattentive—or simply indifferent—to the categories and models of “high” development theory, finds strikingly similar outcomes in supply chains

in Asia, elsewhere in Latin America and Africa. Analytically this literature links the spread of quality-differentiated markets to forms of vertical coordination in which concentrated or oligopsonist buyers—if they cannot vertically integrate into farming, and if they are confident they can recoup their investments—train suppliers to meet standards, and pay an above-market “efficiency premium” when they do. But because private provision of support depends on these and other if’s, market failures are common. There is no reason to suppose, certainly not in Peru, nor presumably more generally, that the level of assistance provided is anywhere near socially optimal. To close the gap between the level of support private firms will provide and the socially optimal level public intervention is required. Part 5 concludes.

2. The competing explanations of the dualism

Much current discussion of dualism starts by asking why the big, efficient modern firms don’t expand into the markets of the informal sector, or the informal firms use their cost advantages to cannibalize the big ones?

There are two competing explanations of this puzzle. The first emphasizes incentives created by legal provisions, the second, the nature of markets and firms. Each of these broad positions has been developed in two variants.

In the first variant of the legal incentives view, associated with de Soto (1989), informal firms are held back by burdensome government regulations and the weak enforcement of the property rights of small owners. Discriminatory regulation and weak property rights result from some combination of public sector incompetence and self-interest lobbying by rich incumbents.

The second variant of the legal incentives view, advanced by Levy (2018), argues to the contrary: that politicians side with the *informal* sector. They impose taxes that penalize growth and subsidize inefficient, small-scale production. Informality expands because the state makes it costly for firms to grow. It makes sense to stay small.

The alternative view, neo-dualism, revives Arthur Lewis’ theory that informal and formal firms operate in different markets, separated by structural barriers: informal-sector firms produce low quality goods for poor customers and lack the capacities to improve. This structural separation explains why informal sector firms cannot enter the formal sector, but also why it is not worth the while of formal firms to enter their inferior markets . Informality is the new subsistence agriculture—a source of labor and nothing more.

One variant of this dualist (Banerjee and Duflo 2011) view takes seriously the possibility of poverty traps: constellations of conditions that make it nearly impossible for firms and individuals close to subsistence to accumulate incrementally the capital needed to enter the modern sector. From this perspective firms can progress only by the efforts of exceptional entrepreneurs, or by a policy windfall.

In a second variant of the neo-dualist view formal and informal sector firms share many characteristics, but the growth of informal sector firms is likely to be stunted by straightforward resource constraints, typically the lack of educated entrepreneurs, in short supply in developing economies (La Porta and Shleifer 2014). Inescapable poverty traps are very rare, the result of exceptionally unfavorable combinations of firm or individual endowments and market context. Barring nearly superhuman entrepreneurs or providential policy interventions the only practical way to eliminate the informal sector in the neo-dualist view is, again, to grow the modern one.

We consider the two broad views of dualism and their variants briefly in turn.

The legal incentives view

The legal incentives view holds that legal distortions introduced by the state result in persistent informality. The first variant emphasizes those distortions that restrain the entrepreneurial vitality of the informal sector and preclude it from growing, to the benefit of the large firms against which they would otherwise compete (de Soto 1989). The second emphasizes regulations that favor small firms at the expense of the large, but only on condition that the small stay small (Levy 2018).

De Soto and the other path

The Peruvian economy is marked by extremely high levels of informality. It is thus not totally surprising that one of the most interesting works on the subject in recent decades focused on that country. Hernando de Soto's "The Other Path," which originally appeared in 1986, combined field study of the Peruvian informal sector and novel explanations revaluing its potential. Instead of seeing the informal sector as basically inert, little more than a pool of low-skilled labor, de Soto considered it full of entrepreneurial energy and native capacity. But the potential was unrealized because the state, at the behest of incumbent, mercantilist forces, imposed laws, regulations and administrative procedures that willfully ignored the distinctive reality of informality. Instead of recognizing and thus legitimizing the practices of the informal actors, the state decreed alien, "official" rules, whose inapplicability to the circumstances of informal actors put their sector outside the circle of legality and condemned it to low productivity (de Soto 1989).

De Soto's remedy is a system for the generation of norms and procedures that decentralizes and democratizes decision-making, making it responsive to informal-sector practices and ending the divorce between law and reality. By freeing the informal sector of the yoke of the state, the tremendous productive potential of the informal sector would be unleashed.

De Soto's view has the merit of underscoring the promise of the informal sector. But it is not clear that the informal sector is, in fact, limited by oppressive rules and laws, at least in Peru. Many of the inadequate (formal) norms and bureaucratic procedures to which it

is subject are not in practice binding. Property is bought and sold problem-free without formal property titles, for which there are de facto substitutes. In addition, actors in the informal sector do not pay mortgages or most taxes, increasing their ability to accumulate family wealth. Together the limited reach of state law and the availability of workable, popular alternatives allow for the substantial accumulation of assets within informality.

Nor is the development of the informal sector limited only, or even mostly, by such burdensome regulation and red tape as may actually be applied. Many firms cannot comply with even reasonable standards and regulations. Field studies and trial policies inspired by some of de Soto's ideas have shown that even after substantial reductions in license costs or massive administrative simplification, informality has not been substantially reduced (de Andrade et al. 2013; de Mel et al. 2013; Jaramillo 2013).⁴ De Soto's postulates are now widely perceived as one-sided, at best.

Levy's under-rewarded efforts

Santiago Levy (2018) also invokes regulations, and distortionary legal obligations generally, as the most important explanation of the expansion of informality in Mexico. But he reverses the valence of the claim: small firms, not large ones are the beneficiaries of state intervention in his view.

According to Levy, the puzzle of relative employment growth in the low-productivity, informal sector is explained to a good extent by policy distortions (summarized in Table 7.9 in Levy 2018). Formal firms must pay for pension and health benefits, some of which (under universal insurance schemes) are provided to informal workers for free. In combination this implicit tax on formal employment and the corresponding implicit subsidy for informal employment bias the allocation of resources against the formal sector.⁵ His solution is straightforward: Eliminating all artificial obstacles, ranging from Social Security taxes to employment guarantees, and employment will allow high-productivity large firms to outcompete less efficient, smaller rivals, and assure the expansion of the formal sector at the expense of unsubsidized informality.

But Hsieh and Olken (2014), in a study of India, Indonesia and Mexico that reviews Levy's earlier work, find no meaningful discontinuities in firm size distribution in these countries. Most importantly firms do not bunch around the size thresholds where one would expect to find them in Mexico, following Levy, if owners were strategically limiting growth to avoid regulatory and tax burdens.

⁴ In Peru, for example, a hyper-simplified system, the RUS was introduced in 2004 and then changed to NRUS (Nuevo RUS) in 2017. It implied that micro and small enterprises paid a very small fee in lieu of all taxes. This made them formal, but only on paper. There is no evidence that being registered in RUS/NRUS changed their behavior in any meaningful way. It just resulted in agglomeration of reported income (due to under-reporting) around the thresholds. See Sunat 2018, p. 11-12.

⁵ Levy (2018) recognizes that the relative importance of each policy can't in effect be quantified.

Furthermore, while Hsieh and Olken find some evidence consistent with the claim that large modern firms are constrained by taxes and regulations, they also observe that enforcement of the legal obligations is lax. Indeed, they cite Levy's (2008) finding that the vast majority of small and midsize firms in Mexico evade the 35 percent payroll tax. This is consistent, in their view "with the evidence that there is little meaningful discontinuity in the size distribution even at thresholds at which one would expect a discontinuity if taxes or regulations were perfectly enforced" (Hsieh and Olken 2014, p. 107). Likewise, Samaniego de la Parra and Fernández estimate that 26% of the employment in formal firms in Mexico is actually informal (Samaniego de la Parra and Fernández 2020, p. 42)

In short, the tax and regulatory burden on large firms is unlikely to be the main explanation for the expansion of the informal sector even in Mexico, where that burden does exist in principle (though much less so in practice). The explanation is even less plausible as a general account of the phenomenon given that the Mexican legal regime is atypical, or at least distinctive, while the spread of the informal sector is widely observed.

The neo-dualist view

The conceptual alternative to de Soto and Levy is the neo-dualist view. In the structural variant, the informal economy, understood broadly as including stunted firms with low productivity and extremely limited possibilities for improvement, results from fixed features of technology or markets that keep micro or small firms from expanding. In the endowments variant, it is specific deficiencies in the makeup of informal-sector firms—a lack of managerial capacities—that prevent them from taking advantage of existing opportunities.⁶ The two views are closely related and which predominates in a particular setting is typically an empirical question: if many informal sector firms are endowed with the resources needed to gradually expand into the advanced sector in one line of business or another the structural barrier disappears. Because of this and other affinities the two variants arrive at similar policy conclusions, though by different routes.

The structuralist (or poverty trap) variant

In the structural variant, set out in *Poor Economics* (Banerjee and Duflo 2011), near-subsistence firms and competitive or entrepreneurial firms with unlimited growth potential face different production functions.

For subsistence firms with a bare minimum of seed capital—enough to start a store at home by purchasing some shelves and stocking them with snacks—the returns on a small, marginal investment (for example, in a distinctive snack that draws a few new

⁶ It is possible to translate from one dualist perspective to the other. Where firms have profound and pervasive deficiencies, we can say they face structural barriers for growth, and where their endowments are rich relative to needs, we can say they do not. But as the two vantage points direct attention to different research programs, it is useful to distinguish them for purposes of the later discussion.

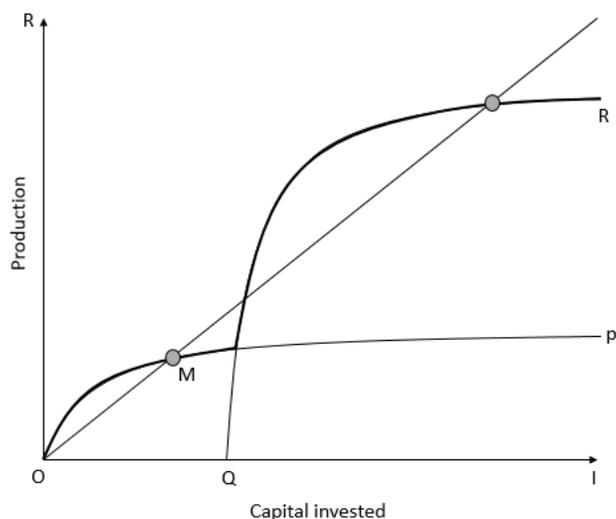
customers) are initially high. That explains why the store owner is able to pay high interest rates for credit. But returns quickly decline as the local market is saturated. A large investment—in expanded facilities, much more stock and so on—could succeed by attracting new customers and effectively expanding the market; but it requires capital that simply can't be accumulated by incremental steps from the starting point, given the sharp drop in marginal returns as the business begins to expand after opening.

Competitive or entrepreneurial firms start with ample capital and face high, and perhaps even increasing returns to marginal investment. Their growth is limited, if at all, by the extent of the international markets in which they come to compete.

The two production functions of the two types of firms can be combined into a single composite that shows the relationship between investment and output as capital outlays increase. This can be seen in Figure 1. OP represents the traditional, decreasing returns technology. QR represents the modern, high-returns range. OR (bolded) is the composite of the two.

In this composite curve OR, the structural barrier to growth appears as a non-convexity: there is a range (at low levels of capital investment) where marginal returns are very low, and a range (at higher capital investment levels) where returns are very high.

Figure 1: Composite Technologies



Source: Banerjee and Duflo 2011

The composite curve translates the structural barrier to growth—the gap between the subsistence and entrepreneurial firms—into a systematic disincentive for growth past a low limit for the small producer: the returns to the subsistence firm decrease just when they would have to sharply increase to permit accumulation of the capital needed to move to the high-return, entrepreneurial range.

The key point is that a rational actor, whose understanding of possibilities is fully reflected in the composite production function (with its associated non-convexities) will reasonably conclude that growth beyond a low limit (M) is impossible, and will put additional family savings, should there be any, to work outside the firm. Only very few people (and normally under very special conditions) are able to keep growing and accumulating.

To underscore the near impossibility of stepwise growth from the subsistence to the dynamic sector Banerjee and Duflo recount the nearly superhuman success of a Chinese entrepreneur. Recognized by her village for her intelligence, she was sent at an early age to a local school for fashion design, but then denied a promised job upon her return. Undaunted, she raised the capital to start a small garment factory by selling sewing lessons to the women in the village and hiring the best students as her first employees. After a decade of continuing growth and re-investment the factory was big enough to compete successfully for contract work from international brands outsourcing to China. In a second, similar story an Indian entrepreneur realizes that she can increase her earnings by separating the bits of tungsten and other metals from the trash she and her husband collect and selling it pre-sorted to wholesalers; soon she and her husband have moved from trash collecting themselves to organizing the trash collection of others.

The point of these stories is that they are necessarily exceptional. The successful women are forces of nature, while most of us are not. The constraints they escape will bind almost all others. More fundamentally, these exceptional cases are self-limiting in another way: the increased earnings, which allow the subsistence firm to escape the low-yield trap in the production function arise from organizing other subsistence workers—in one case incorporating them as workers into a competitive-sector factory, in the other capturing part of the returns from marginal organizational improvement in subsistence work. Not everyone can organize others, so such strategies are inherently exceptional.

But, to repeat, this is at bottom an empirical finding, dependent on the exceptionality if not uniqueness of super entrepreneurs like the Chinese garment manufacturer. If it turns out that those super capacities are in richer supply, and that those actors have access to capital through a network of admiring friends and business associates or simply the lucky availability of a credit scheme, the structural limits to growth look more like a hindrance than a true barrier. In more recent work, using new data, we will see Banerjee and Duflo (with coauthors) come to just this conclusion.

The endowments variant

The endowments view sees constraints on growth rooted in the resources available to the firm, not in the nature of markets and technologies per se.

For La Porta and Shleifer (2014), who explicitly reject explanations rooted in legal distortions, informal firms resemble formal firms in many ways. The skill levels of the workers in both type of firms are about the same, but there is a crucial difference, as they see it, in managerial resources. The vast majority of informal entrepreneurs simply lack the skills to be successful in the formal modern sector. In support of this claim they point to two studies which find that the managers of informal firms are considerably less educated than those of formal firms (see La Porta and Shleifer 2008; Gennaioli et al. 2013). Since the highly educated are, almost by definition, scarce in developing countries, and will naturally be drawn to formal sector firms, where their abilities can be rewarded from the first, the informal sector is doomed to stagnation for want of managerial talent. And as in the Lewis model, informality will disappear only when countries develop, and the modern sector grows and absorbs those workers previously employed in informal firms.

But notice that where the structural variant sees fundamentally different types of firms (and technologies) in the informal and competitive or dynamic sector, the endowments variant sees marginal differences: If the subsistence firm had somewhat better or more energetic management, or employees a greater range of occupational choices it would reach the high-returns range of the production function and growth would be self-sustaining or the workers could escape subsistence informality. If enough firms have such endowments, the structural barrier to growth vanishes.⁷

Given the distribution of endowments assumed in studies of the informal sector, however, the structuralist and the endowment views come implicitly to similar policy conclusions. The solution to informality for both is to create (well paying) formal jobs in the modern sector. As the formal sector grows, it sucks the employment out of the informal firms.

3. Some counter facts and an alternative hypothesis

In this part we look at the limits of the neo-dualist conclusions about the inert character of the informal sector. First, we canvas evidence that the capacity distribution of developing economy firms is at odds with neo-dualist claims; then we develop the concept of the quality hurdle to characterize the challenges faced by capable, small (and mostly informal) firms at the threshold of the dynamic economy.

⁷ One way to distinguish the two variants of neo-dualism is in terms of the production functions they suppose. Banerjee and Duflo (2011) assume two production functions: one traditional and one modern (with a minimum required investment). With sufficient financial resources and scale producers could switch from the traditional to the modern technology. But because accumulation is hard under the traditional production function, those switches are relatively rare. This non-convexity is the source of poverty traps: relatively small differences in initial wealth may affect significantly where two otherwise similar households may end up. La Porta and Shleifer (2014) assume that all producers face just one technology, More capable producers will have a higher TFP and will be able to accumulate more wealth but, as in the standard Solow model, differences in initial capital don't matter much.

The inconspicuous capabilities of the informal sector

Recent studies of structural change in Tanzania, the persistence of the informal sector in Mexico, the difference between labor and firm informality in Brazil and microfinance in India find more continuity in the distribution of capacities than the theories just canvassed predict. *Nolens volens* these findings underscore an unsuspected potential for growth in the intermediate category of firms between the informal and formal sectors.

In a study of structural change in Tanzania, Ellis, McMillan and Silver (2018) emphasize that claims that the micro-, small-, and medium-enterprise (MSME) sector is unproductive miss the enormous heterogeneity among MSMEs. They recall that Lewis identified an “in-between sector” of firms neither completely formal and modern, nor informal and traditional, some with the potential to expand and modernize with economic development.⁸ They find “a surprisingly large number of firms” in what they call, accordingly, the in-between sector in Tanzania. Specifically, they write:

“There is a significant right-hand tail of firms in the MSME manufacturing sector whose productivity levels equal or exceed those in the formal manufacturing sector. The total number of employees operating in the in-between sector in all activities falls slightly short of 1 million [out of 5.2 million (FSDT 2012, p. 82)]. These are the firms that are most likely to have the capability to grow into medium-scale manufacturing enterprises.” (p. 306)

Levy’s results for Mexico are also consistent with the existence of a very sizable share of in-between firms that, under the right conditions, can clear the quality hurdle and enter formal value chains. Levy studies those firms that survive between 2008 and 2013. He finds that surviving firms become more capital intensive: their stock of capital increases 16.4 percent while employment actually fell by 5.6 p.p., and average size, measured by workers employed, fell from 4.5 to 4.3. He also finds that approximately one-fifth of the low productivity firms registered in 2008 that survive for five years become high productivity in 2013; fully half of the survivors become medium productivity. In addition, approximately one quarter of the medium productivity firms of 2008 that survive for five years become high productivity in 2013 (Table 5.8 in Levy 2018). This result is also generally consistent with the Hsieh and Olken (2014) study, mentioned earlier, which likewise found continuity in firm size distribution in Mexico.

Also, Ulyssea (2018) in a study aimed at highlighting the difference between the extensive margin of informality—whether firms register and pay entry fees to achieve a formal status—and the intensive margin—whether formal firms in the first sense hire workers off the books—, finds that there is significant heterogeneity in productivity among informal firms in Brazil.

⁸ The reference is to Lewis (1979).

But perhaps the weightiest evidence for the existence of a sizable share of informal sector firms that should be regarded as in-between comes from Banerjee et. al. (2019). In recent work have come, step by step, to recognize that aptitudes for continuing development are hardly exceptional among informal sector entrepreneurs, even if not universal. They also find that there is important and persistent heterogeneity in entrepreneurial ability. In a field study in Hyderabad, India, they distinguish “Gung-ho entrepreneurs” (GEs), who started a business before receiving microfinance credit, and “Reluctant Entrepreneurs” (REs), without such experience. They find that GEs benefit greatly from microfinance, increasing the scale and performance of their businesses: “self-employment hours increase almost 20 percent, the stock and flow of business assets increase by 35-40 percent, business expenses increase by 80 percent and revenues more than double, relative to GEs in control.” The effect of microfinance on REs is insignificant.

The discussion so far yields three stylized facts. First, there is a greater developmental potential, or more continuous distribution of capabilities in the informal sector, than current discussion allows. Second, there is little evidence that firms in the informal sector, despite capabilities in excess of the demands of subsistence, regularly enter the dynamic sector, suggesting that their potential for development is still limited in some important way. Third, there is no reason to think the limits to development are fundamentally the result of legal obligations: informality, in the sense of failure to comply with official requirements, does not seem to penalize or privilege informal-sector firms in any determinative way.

In the next section we show that the existence of a quality hurdle—a bundle of technical and organizational capabilities that are preconditions to participation in the dynamic sector—reconciles these three stylized facts. It also suggests a re-interpretation of dualism that continues to see the dynamic, modern sector as distinct from the rest of the economy, yet accessible to it under favorable conditions.

The quality hurdle

Accounts of modern international supply chains emphasize their rigor. Buyers expect suppliers to produce goods that meet exacting specifications, free of defects, on precise schedules (just-in-time), while complying with (the more demanding of) national or international standards regarding the environment, labor conditions, the rights of first peoples, etc.

Suppliers must meet all these requirements reliably, since delays or defects in production are enormously costly in supply chains that maintain minimal buffer inventories. Since standards continually ratchet upwards, suppliers must also be able to continuously improve their performance on all these dimensions. To qualify to compete for a place in an advanced supply chain, suppliers must meet all or most of these requirements—or demonstrate the capacity to meet them soon, for example by quickly

identifying and correcting shortfalls. Once in a supply chain the supplier's performance is regularly rated. Persistent failure to keep pace results in exclusion.

Domestic supply chains are less demanding, emphasizing reliability of supply over the constancy of quality and relaxing or eliminating requirements for continuous improvement, especially for new entrants. But these differences notwithstanding, participation in domestic supply chains, like participation in their international counterparts, demands a thoroughgoing and often wrenching break from habitual practices, including, especially, willingness and capacity to respond quickly and effectively to customers' complaints.

Participation in dynamic supply chains is also unquestionably rewarding: admission is a kind of certification of high-level capacity generally recognized in one's industry, and the continual review of performance under increasingly demanding conditions is an invaluable source of information about organizational and technical know-how.

This combination of risks and rewards mean that the prospect of entering into a dynamic supply chain confronts the owner of a firm with an investment decision similar to, but even more daunting, than the decision faced by the owner of a small, informal-sector firm considering whether to marshal resources for a dash to the high-returns range of the production function. For the near subsistence owner, as Banerjee and Duflo make clear in their early work, the main, and indeed virtually the only, problem is financial: returns on the low-yield range of the curve simply don't accrue fast enough to make a lumpy, high-return investment feasible, barring super-human or, as they later suggest, gung-ho efforts.⁹ The key point is that the small investor can, in some sense, buy the "expertise" for the high-returns endeavor—in the simplest case the additional shop inventory—more or less literally off-the-shelf.

At the entrance to dynamic supply chains financial resources are a necessary, but far from sufficient, condition for participation. The whole point of the elaborate qualification process, centered on review of the candidate's product and process standards (and procedures for attaining them), as well as in an ongoing monitoring of suppliers' performance, is to ensure not that an investment has been made but rather that it reliably yields the intended result. It is the firm's capabilities, and above all its ability to develop and extend its capabilities, that is, and continues to be, in question.

The potential investor understands all this and faces a choice, which, again, differs from that of the very small firm owner just above the subsistence line. In the near subsistence case, the choice is between (saving for) investment and consumption—living a little. At the boundary to the dynamic sector, the choice is likely to be among different alternative investments. Earnings from one firm could go to start another, in a wholly different domain—diversification. Or they might go into starting a new firm in the same line of

⁹ Gung-ho entrepreneurs might succeed because of some combination of perseverance and unusual managerial or technical expertise, which would slightly complicate this picture; but Banerjee and Duflo ignore this possibility and here we do the same.

business in a different location, perhaps with (another) family member or associate—horizontal expansion. Or they might go into upgrading the various capabilities of the existing firm in the ways needed to meet and keep step with the requirements of the dynamic sector.

In the near-subsistence case, where the financial constraint is dominant and all the information needed to calculate rates of return are captured in the non-convex production function, there is a single, rational answer to the question whether to invest or not. At the border between the static and the dynamic sector, there is not. The calculus of benefits depends on the particulars—often nearly imponderable—of the situation: Is now an opportune moment to diversify into real estate in this city? Is demand for my decent-quality replacement parts growing fast enough to support an expansion, or second location, of my machine shop? Will the domestic supermarket chain that wants me to become a regular and certified supplier help me solve technical difficulties if they arise? Do I need to free up money now for my children's education? The rationally self-interested investment decision depends on the answers to these, and countless other, contextual questions.

But precisely because the decision to invest in upgrading to join a supply chain is only one choice among many, and often the most demanding and riskiest of all the competing possibilities, it is at the point of that decision that we locate the boundary between the dynamic and the static sectors. Seen this way, the most relevant frontier is not between legal formality and informality: between firms that comply with all or most legal requirements and those that are not in compliance or don't even bother trying to comply. Rather it is between firms mastering (and demonstrating continuing mastery) of the product and process standards required in the dynamic sector and firms that decide not attempt such mastery. Or attempted but failed.

The existence of a quality hurdle helps explain not only why so few informal sector firms, despite possibilities for capacity building, enter the dynamic sector, but also why informal sector firms retain cost advantages in production that make it difficult for dynamic sector firms to outcompete them in low-quality, low-price goods. First, meeting the requirements of the quality hurdle is costly, at a guesstimate much more costly—and certainly more unforeseeably costly—than meeting the requirements of legal compliance. The necessary investments put a relatively high floor under the prices dynamic sector firms can charge, despite all their productivity advantages. Second and more subtly, some, perhaps many, of the informal-sector firms that end their upward capability trajectory just below the quality hurdle thrive and perhaps expand as suppliers of good-enough (replacement) capital goods or support services to other informal sector firms. The productivity gains these firms do achieve would thus accrue to the benefit of the informal sector, making it more competitive with (and resistant to invasion by) the formal sector. The more pronounced the quality hurdle, the more stable, in the absence of policy interventions, the division between dynamic and static sectors. And the more persistently dualist an economy will appear.

To test these claims we would ideally examine the distribution of firms on both sides of the supposed capacity divide in various industries in countries such as Mexico and Peru. We would look carefully at the reasons why firms did and did not choose to clear the quality hurdle—and why they failed if they tried but did not succeed—and the role that firms stopping short of the hurdle play in sustaining the informal sector. That investigation would need to be complemented by enquiry into the kinds of support service that could make it more appealing for informal firms to take the risks of qualifying for participation in advanced production systems.

Instead, in this exploratory study we limit ourselves to presenting, next, a sketch of quality hurdles facing small producers of fresh produce in Peru. We focus on small farmers because they are numerous and at risk: Their possibilities for finding productive, alternative employment in manufacturing (or elsewhere) are extremely limited. Understanding whether and, if so, how they can augment their capacities and connect to the dynamic sector is of central importance to articulating new models of development.

We focus on Peru because it could be an important test bed for such a model. An export boom in fresh fruits and vegetables is already underway. So far it has centered on large, mostly vertically integrated producers, which grow and process their own crops. But further expansion of the export sector will depend, in part, on incorporating the country's smallholders, many of whose families acquired titles to small parcels of land (5 hectares or less) after the dissolution in the 1980s of the cooperatives formed as part of General Velasco's agrarian reform of 1969.¹⁰ Understanding how small producers, typically in association with each other and with the support of their customers, have been able to clear the quality hurdle in the absence of public support will help orient discussion of public policies that broadly encourage this kind of capacity building in the many cases where private interests do not happen to align to favor it.

Our method of studying small Peruvians produce farmers is now called economics by walking around: talking to the key actors, in this case the small farmers and exporters and supermarkets that buy their produce.¹¹ As we are interested in strategic choices shaping the market at the entry to the dynamic sector, we spoke with both the managers of supply chains, including especially those whose day-to-day responsibilities keep them in constant contact with their suppliers (and with the suppliers themselves). Often, we spoke with small groups of both together about their experience and plans. In addition, we spoke with managers of cooperatives (and associations) producing cacao, coffee, mangos, asparagus, avocados and bananas. Although the cooperatives operate in distinct market segments and often export directly, the problems the managers face in helping small members meet and maintain high quality standards are strikingly similar to those encountered by managers of supplier relations in midsize export supply chains.

¹⁰ The most detailed narrative of the evolution of the cooperatives (and similar firms) created during the Peruvian agrarian reform can be found in Bonfiglio (2019)

¹¹ The term was coined by Blanchflower (2007)

We report only findings that were fully consensual—shared by both buyers and sellers in each conversation and across all conversations with actors in similar relations—and with the cooperative managers where relevant. In a loose sense then, we are presenting the heuristics or rules of decision-making and organizational design applied by each side of the market and agreeable to the other.

Our findings agree with those of the literature on the participation of small producers in developing countries in global and domestic supply chains. We find some comfort in this agreement for the generalizability of the results.

4. Quality hurdles in the Peruvian agricultural sector

Perishables—fresh produce generally—are gaining weight in consumption baskets worldwide, in middle-income developing countries and advanced economies alike. Consumer tastes are changing, turning against processed foods produced by “industrial” methods and in favor of more “natural” products such as fresh fruits and vegetables, ideally sourced locally (or from a known producer) and free of dangerous chemical residues, if not “organic” by one of the many competing definitions.¹²

The appeal of fresh, natural products is further evident in efforts to make frozen fruits and vegetables fresher and more natural, with corresponding pressure on the standards applied to farmers and the rest of the supply chain. Exports of fresh, frozen and conserved products originate in the same fields; but the produce that does not meet the consumers’ size or cosmetic requirements is processed.

The spread of e-commerce, furthermore, means that many shoppers buy staples online. Supermarkets in middle-income and advanced economies are increasingly forced to rely on attractive offerings of fresh produce and other short-lived and wholesome products to draw consumers into their stores. The most forward-looking supermarket chains recognize the need for a reliable supply of high-quality fresh produce and are establishing dedicated teams to help wholesalers close to farming communities build the capacity of their local supply networks.

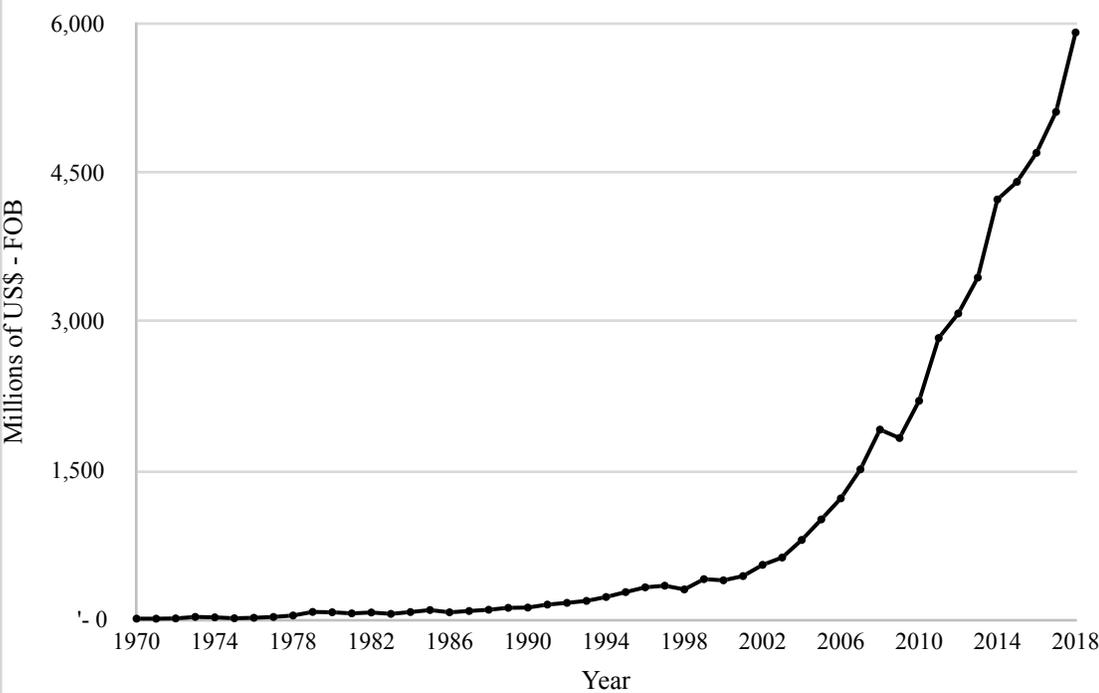
All these changes have both spurred and been encouraged by the spread of public and private quality standards in food. The rapid increase in public food standards can be gauged by the exponential multiplication of notifications of new sanitary and phytosanitary regulatory measures to the WTO, from a few hundred in the mid-1990s to more than 15,000 to above 20,000 in 2017 (Swinnen 2018, p. 170); the growing importance of (more demanding) private standards is reflected in the increase in GlobalG.A.P.-certified producers from around 20,000 in the mid-1990s (Maertens and Swinnen 2015, cited in Swinnen 2014) to around 200,000 in 2018 (GlobalG.A.P. 2018, p. 32). Growth in agricultural exports in these years has, moreover, been greatest in the

¹² For further discussion on the development of quality standards in the dairy industry, see Sabel et al. 2015.

higher value products—fruits, vegetables, seafood, fish, meat and dairy products—where standards are most important; the shift to such exports has been most marked in developing economies in Asia and Latin America (where the share of high-value added products in agricultural exports doubled from around 20 percent in 1980 to 40 percent in 2010), with similar, but slower changes in African economies (Maertens and Swinnen 2015, cited in Swinnen 2014). With these economies a “supermarket revolution,” led by international and foreign investors, has led to concentration in the food retail sector and application of standards to a growing share of products intended solely for the domestic market (Dries et al., 2004; Reardon et al., 2003; cited in Swinnen 2014).

Against this backdrop, Peru has in recent decades become a leading exporter of fresh fruits and vegetables. In products like avocados, asparagus, blueberries, grapes, or mangos it ranks among the 5 biggest exporters in the world; in many of these categories among the top 3. Exports of these agricultural products have increased since the beginning of the century, from USD400 million to 7 billion in 2019, with expectations of continued growth.¹³ (See Figure 2)

Figure 2: Peruvian Agricultural exports



Source: Central Reserve Bank of Peru 2019. Authors’ own elaboration.

¹³ Strictly speaking, we are showing what in Peru are called “non-traditional” agricultural exports. They refer to new agricultural exports (like fresh produce) and are defined in opposition to traditional agricultural exports (like cotton, sugar and coffee) that Perú was already exporting in the 1970s (or earlier). From those traditional export products, only coffee is still exported.

This expansion drew on Peru's locational advantages, such as a stable climate with ample sunshine, the cooling effect of the Humboldt Current, and counter-seasonal growing patterns opportune for supplying Northern Hemisphere markets, along with its large endowment of relatively inexpensive labor and energy.¹⁴ But the boom would not have been possible without important policy interventions: Several large irrigation projects (particularly Chavimochic I and II) increased the supply of arable land. Peru entered 15 free trade agreements (or similar) since 2006, with countries like the US, China and the EU, removing tariff barriers to exports. It also augmented the capacities of its phytosanitary authority, SENASA, so that its agricultural products meet the demanding regulatory requirements of its trade partners. A Law on Agrarian Promotion (Number 27630), approved in 2000, allows short-term labor contracts in agriculture. Labor market flexibility is especially important for Peruvian exports of fruits and vegetables because, unlike the highly mechanized production of cereals in Brazil, Argentina and the US, the sector is very labor intensive, and employment is highly seasonal, increasing severalfold at harvest times.¹⁵

The largest exporters of fruits and vegetables, which together supply about 70 percent of the exports market, are highly sophisticated, and mostly vertically integrated firms. They sell directly to global brands; some are recognized as exemplary producers in extremely demanding supply chains, such as Walmart's. They produce most, and in many cases all, of what they export on their own land.¹⁶ The largest of them have estates of several thousand hectares in the coast. They focus on capital-intensive crops like blueberries, where the cost of soil preparations is the greatest. In response to market opportunities they may buy produce from smaller farmers. But with few exceptions they do not systematically build their own supply chains with small producers; and their substantial R&D capacities are directed towards improving cultivation and processing of the crops on their own land, or entering new markets, not supporting suppliers.

With much less capital at their disposal than the largest exporters, the midsize producers and packing operators are highly reliant on outside suppliers. These firms

¹⁴ Ardilla et. al. (2019) emphasize the role of trade liberalization, the rise of supermarkets, and breakthroughs in cold transport technology in increasing the share of imports in fresh fruits sold retail in the US from 23 percent in 1975 to 53 percent by 2016, with 90 percent of the imports sourced from Latin America.

¹⁵ There are no exact calculations. As a rule of thumb there is, during high season, at least one worker per hectare. This is sixty times more labor intensive than Brazil's soy production, which requires 0.017 workers per hectare (see Bustos et.al. 2016). In some provinces of the Ica and La Libertad regions, the two main centers of Peruvian modern agriculture, unemployment is virtually zero. They employ migrant workers from the Andean provinces migrate during harvesting season.

¹⁶ Among 5 of the top largest exporters (Camposol, Beta, Talsa, Danper and SAVSA), the percentage of raw materials sourced from own funds for fresh produce is close to 100%, with the exception of DanPer. The percentage falls significantly for frozen and conserved fruit for the cases of DanPer and Savsa as the raw material utilized for those is normally produce that fails to meet size or cosmetic requirements to be sold fresh. In those cases a large percentage can be supplied by other producers (including smaller ones).

normally grow some of their inputs themselves; but well over half their needs, and usually more, are met by purchases from small farmers. Given the rising costs of land and the difficulties of acquiring easily managed, contiguous plots, growth in this segment of the market will depend almost entirely on increasing outside supply.

Though the midsize producers normally do not sell directly to global brands, their products must meet essentially similar standards regarding regularity of size, shape and color, exposure to pesticides (and, of course, presence of pesticide residues), control of prohibited agrochemicals, maintenance of buffer zones at the margins of fields, respect for authorized crop rotations for particular cultivars, and so on.

Small producers outside the dynamic sector cannot begin to satisfy these requirements on their own. Helping them do so, and carefully monitoring that they in fact do—helping them, in other words, clear the quality hurdle—increasingly makes close and continuing collaboration between the buyer-processor and the small farmer supplier indispensable to growth for all but the very largest exporters.

These pressures for collaboration are inducing ambitious midsize producers such as Cuyuma, Westfalia Fruit Peru, Wiraccocha and Asociación de Productores de Espárragos Compositan Alto to both increase technical support for and monitoring of their small suppliers. At the heart of the emerging relation is an exchange: Buyers provide the supplier with funding, seeds, and technical assistance. In many cases such supervision and support are nearly continuous, entailing daily visits, if only to permit immediate detection of the use of impermissible chemicals to protect crops or accelerate their growth. In return for providing these inputs and services at below market cost the supplier gives the buyer the right of first refusal when the crop is sold. This affords the buyer with a reliable source of supply at the requisite quality level, without tying either party into a long-term commitment to a fixed price.

Where possible, the midsize producers prefer to buy from smallholders who are (at least de facto) members of an association or cooperative. As association ties the good of each to the good of all in the same group as it naturally encourages the small farmers to teach and learn from each other, cutting the total cost of continuously educating the individual members of the association in good practices, and reducing in equal measure the costs of support born by the buyer. Collaboration among the farmers lowers the costs of learning good practices, monitoring their application, and introducing new varieties.

These findings were corroborated and extended in discussion with the managers of cooperatives. Helping members and potential members to meet standards—again, to clear the quality hurdle—proves paramount to their responsibilities. Yet asked directly what makes a cooperative succeed the managers say, unanimously, trust, meaning roughly that each member shares a commitment to the common purpose and will subordinate self-interest to it. Only when asked to explain the process by which new members are admitted, and existing ones evaluated and, if need be, sanctioned or

assisted, do the managers focus on meeting standards and developing the capacity for continuous improvement.

An initial discriminator in the assessment of applicants for membership is a producer's response to criticisms of product quality. Some react angrily or dismissively, saying that the fault lies with the standard or the evaluator; they themselves are following methods proven through generations. Those more apt to become capable members want to understand what went wrong and how they can improve. But even in the case of those determined to improve, it can take two or so years to establish the capacity to actually do so, with the support of the association or cooperative; and once established capacities must be renewed and extended to keep pace with increasing quality requirements. This experience is reflected in the cooperatives' careful qualifications for membership, and preference for long trial periods for candidate members, as well as continuing evaluation and support for those that do qualify. One well-run cooperative, for example, imposes minimum quality and productivity requirements for candidate members; observes the candidates' performance, and especially their ability to improve with support, for two years before deciding on membership; and ranks all members into three categories by their performance, with those in the middle group receiving support targeted to their specific problems, and those in the low-performing group eventually excluded from the coop if they persistently fail to improve.

One exception that points towards the new rules

Westfalia Fruit Peru SAC (WFP) is one of the largest avocado exporters in Perú, which is the second largest exporter of the fruit.

WFP started life as Camet Trading SAC, a mid-sized producer with 70 hectares of rented land, limited capital and an innovative business plan. Large avocado exporters in Peru depend predominantly on produce from their own extensive plantations in the coastal regions. Camet Trading was convinced it could compete by buying from outside suppliers if it could help them meet export standards. Camet Trading also noticed early on that buying from the numerous small producers in the mountain regions (up to 2800 meters above sea level) afforded enormous growth potential. Avocados grown at altitude could be harvested in the months before the coastal producers' export window opens in April, and command higher prices.

In 2017 Camet Trading was acquired by Westfalia Fruit, a multinational with a large global avocado footprint. Today ninety-seven percent of WFP's sales originate in fruit inputs purchased from outside suppliers, many of them small producers. It sees its main competitive advantage in the efficiency with which it can increase output by integrating outside suppliers. Other large firms are beginning to emulate its model of collaborative sourcing.

To ensure that the outside suppliers reliably deliver high-quality avocados in sufficient quantity—and remain loyal to the buyer—WFP insists that they, with its support, qualify for Global GAP group certification option 2. Under that option the large firm establishes

procedures for quality assurance and safety, and monitors compliance through desk audits and on site inspections. Global GAP then inspects a random sample of ten percent of the candidate suppliers on-site to check whether the procedures and monitoring regime meet requirements; and if they do the conforming small producers are listed as a group on a certificate issued directly to the large firm as the “manager representative.” This form of certification helps WFP’s suppliers attain an otherwise unaffordable qualification for the most demanding and lucrative markets; but it also greatly reduces the chances that the small producers, with their newly validated capacities, will defect to other buyers as they only count as certified when selling through WFP. In addition, WFP continues to develop a bundle of specialized technical and other supports to its smallholder producers, some for a fee, others gratis. For example, it finances purchases of seedlings but offers technical assistance without charge. If the small landowners run out of money before harvest, WFP provides bridge financing.

But WFP naturally only co-invests in capacity building when there is a high probability of making a target return. A threshold condition for investment is that, taken as a whole, a regional agglomeration of smallholders produces a sufficient volume of fruit annually—according to WFP’s rule of thumb about 220 US short tons a year—to cover the fixed costs of establishing reliable logistics and support services. Formation of the regional hub, in turn, shapes the firm’s strategy for selecting reliable and capable partners from among the smallholders: WFP contacts all current producers of avocados and offers to work with them to achieve option 2 certification, and to buy their products at a premium price or at market prices depending on the result of the certification process. Firms that struggle with certification but show promise of improvement are given up to 2 years to succeed. According to WFP, 80% of avocado growers in a new region typically qualify for certification. Farmers in the region who switch into avocado production can qualify by the same process; and the success rate of the newcomers, with support in certification from WFP, is again approximately 80%.

But investing only when private returns to WFP exceed its costs means that it will not invest in the (presumably frequent) case that social returns—the gains to Perú as a whole from an investment—exceed private returns: when, in other words, there are positive externalities or spillovers from investment that accrue to society, not the company. For example, WFP will not co invest with a producer who must switch to growing avocados from another crop. WFP mostly helps only producers already achieving acceptable levels of productivity and quality. Neither will it invest in public goods like infrastructure—for example, sophisticated irrigation. In terms of the discussion here, WFP invests in those producers who are close the quality hurdle and therefore with good chances of crossing it at a conveniently financeable cost to both

supplier and buyer. It avoids those that require significant (public or private) investments to get to that point.¹⁷

5. Contracting in differentiated agricultural markets

Our observations are supported by the findings of a substantial body of literature on deep changes in agriculture and the development of supply chains in advanced and developing economies. In economics textbooks agriculture is still presented as a classic example of spot markets, in which numerous buyers and sellers, all price takers, transact for standard products, or commodities, with all information relevant to exchange fully shared. Today in fact spot markets in agriculture are the exception, not the rule. Concentration among wholesalers and retailers means that in many geographically bounded markets many farmer producers sell to a few buyers. Products, even once archetypical commodities such as wheat, are differentiated by quality (including aspects of quality, such as environmental sustainability or the labor conditions of production, which are not apparent to inspection) and by the timeliness and reliability of delivery. Because products are differentiated pertinent information will be costly to acquire and more accessible to some traders than others, not generally available in the market.

When many sellers face few buyers a normal result is oligopsony: price fixing to the advantage of buyers over sellers and consumers. But in modern, differentiated agricultural markets the supply of inputs to intermediaries and the demand for the resulting products are insensitive to price changes or inelastic; matching supply to demand when prices do not change requires deliberate coordination, constraining the oligopsonists' behavior and favoring the development of the kinds of supply chains we have been discussing.¹⁸

On the supply side, farmers in differentiated markets must, in addition to achieving the capacity for self-monitoring and self-correction required in the advanced sector of their market, meet the buyer's specific requirements. Learning to do so requires an investment specific to each, particular buyer—for whom alone it has value; and it is thus the buyer who bears the cost. The buyer likewise bears a share of the cost of investments in monitoring the execution of contracts linking adherence to the new,

¹⁷An example of good opportunities for Peru that WFP has from its point of view good reason to ignore are the small avocado producers in the Moquegua, one of the southernmost (and smallest) regions in the country. The climate in Moquegua allows for early harvests (and hence higher prices). But design flaws in the tubing in the feeder system of a recent irrigation project limit the reliable supply of water; and this, together with middling quality soil and the small size territory result in annual production levels that do not meet WFP's minimum requirements, leaving it to either government or NGOs to fix the infrastructure enough to make the region attractive to the private investor, and eventually assist those growers of other crops who might want to benefit from WFP's presence in Moquegua but can't manage the costs of conversion themselves.

¹⁸ This discussion follows the analysis in Sexton 2012 and Swinnen et al. 2015.

specialized methods and the acceptability of the final product. Together these investments mean that the buyer's costs of switching suppliers—qualifying a new farmer-supplier to replace a current one—are high relative to the costs of managing and extending relations with demonstrably capable and dependable providers.

The costs of disruption are increased by constraints imposed, on the demand side, by the intermediaries' customers, such as supermarkets. For these buyers, as we saw, reliability of supply is paramount. A missed delivery causes immediate damages in foregone sales and may raise longer-term questions about reputation; so great is the potential harm that the penalty for unreliability is typically exclusion from the supply chain. (Note that delivery failures in one period can't be compensated by price reductions and the prospect of increased sales in the next because processing capacity and logistics concerns—starting with the customer's shelf space—limit the buyer's ability to expand sales of a particular product at a discount in the short run.)

Together the supply- and demand-side constraints induce a shift from spot markets to vertical coordination of supply chains for differentiated goods through contracts linking production methods to product definition. In the US such "interlinked" contracts covered 11 percent of the total value of domestic agricultural production in 1969, increased to 28 percent in 1991 and then 39 percent in 2008 (MacDonald and Korb 2011, cited in Sexton 2012).

These constraints are even more binding in developing economies with weak institutional environments, subject to an important proviso. In developing economies potential, small farmer-suppliers, facing as we saw the quality hurdle, are likely to lack experience with quality control and other basics of participation in the dynamic economy in addition to capacities specific to a particular customer. This increases the costs, but also the risks of investment to the buyer: since the basic capacities, once acquired, can be redeployed in relations with other customers, the buyer must be on guard against the supplier's possible opportunism. The same goes for monitoring. In a weak institutional environment, where contract enforcement is unlikely, monitoring will have to be intensified as a partial substitute for missing legal incentives to respect contract terms. But it will be difficult to separate monitoring for compliance from monitoring as part and parcel of teaching basic skills; so more monitoring may also increase the chances that the supplier breaches the contract for another, more favorable one, or threatens to do so unless the current customer offers better terms. Together these considerations move the buyer to offer the supplier an "efficiency bonus" or premium to the market price as an incentive to overcome the temptations of opportunism. Thus, despite the power imbalance between buyer and supplier, the constraints of differentiated markets, especially in developing economies, lead the buyer to support learning by the supplier with the aim of establishing long-term relations (Swinnen 2014).

But these governance arrangements are expensive and buyers will seek to avoid them when they can. This is the proviso. In differentiated markets, where quality and thus the quality hurdle matter, buyers will support training and long-term relations with small producers only if the limited supply of affordable land makes vertical integration

impossible. And even then large exporters will choose to minimize transaction costs by contracting with a few large suppliers rather than many small ones. We noted the preference of large, Peruvian exporters—early entrants in the boom—for vertical integration. The full rank order of preferences —vertical integration/large suppliers/small suppliers—is clearly documented in a careful study of the effects of certification—especially product certification, covering growing conditions of the product on the farm—on the sourcing strategies of Peruvian asparagus exporters. At the start of the study period in 1993 purchased just over half of their inputs from outside farms of all sizes and 15 percent of their total demand from smallholders with 10 or less hectares of land. By the end of the study period in 2011, after the spread of the demanding GlobalG.A.P. standard, all from outside farms had decreased by 37 percent, and purchases from smallholders by just under three quarters. Underscoring the importance of quality, non-certified companies continue to source from smallholders (Schuster and Maertens 2013).

But where vertical integration is impossible and large suppliers are unavailable—perhaps because, as in Peru, they prefer to become exporters themselves—small producers are successfully included in supply chains for high-value-added products. A recent survey of the literature (Swinnen 2014, p. 3) includes dairy production in Bulgaria and other examples from Eastern Europe (Dries and Swinnen, 2004; Noev et al., 2009; Van Herck and Swinnen 2014); the vegetable export sector in Madagascar (which consists only of smallholders, some 10,000 of them) and the fruit and vegetable sectors in Zimbabwe (Henson et al. 2005), Chile (Handschuch et al. 2013) and Thailand (Kersting and Wollni, 2012). In China the horticulture export sector is based almost completely on smallholders producing under contract (Wang et al. 2009); smallholders also predominate in similar supply chains in many other Asian countries (Gulati et al. 2007). *Ceteris paribus* the results we found in Peru are typical, not exceptional.

It is a short step from this finding to questions about the role of government and policy in encouraging growth in this sector, and generally. In an inconceivably benign and efficient world, large firms, having reached the local limits to vertical integration, would offer technical support and other forms of assistance to those farmers, and only those farmers, who could potentially benefit from them; and large and small farms together would supply exactly what the global high-value added markets for agricultural goods demand.

But it seems much more plausible to conclude on the evidence above that the patterns of inclusion of small holders in sophisticated supply chains reflect countless local accidents of history and the current, but changing preferences of exporters, here and there corrected by policy measures—not the dictates of efficiency. On the contrary. The world market for high-valued agricultural products is, we saw, growing rapidly. With help from buyers, and from one another in cooperatives or associations, small holders can clear the quality hurdle and help meet the growing demand. But the large firms only help when it is in their immediate interest to do so, leaving an indeterminate but potentially large number of small holders outside the dynamic sector. This is precisely the situation in which government policy traditionally matters. But in countries like Peru,

and many others besides, traditional policy has been so absorbed with the needs of industrialization, or more generally growing the advanced sector to absorb its informal shadow, that policies supporting capacity-building by small holders have been left to languish, if ever they were actively pursued. Understanding the problems firms at the boundary between the formal and informal sectors face—the quality hurdle—is a crucial first step towards helping them.

6. The new dualism and the quality hurdle

Dualism has changed since it was introduced to the lexicon of development economics in the 1950s to analyze the coexistence, in the same economy, of a small fringe of modern firms and a much larger hinterland of informal, subsistence activities, serving at best as a labor reserve for expanding industries. With the expansion of modern supply chains, firms seeking to enter the modern sector face new demands for reliability, quality and continuous improvement—what we call the quality hurdle. The informal sector now hums with activity that goes well beyond subsistence, even if productivity is low by modern standards. One sign of this constrained dynamism is the existence of many “in-between” firms, neither in the traditional informal sector nor the modern, dynamic one. Because of the quality hurdle the wall between the two sectors is higher in the new dualism than the old; but the presence of many “in-between” firms means that the two sectors are, at the same time, closer together.

But while dualism has changed, the discussion of informality in development economics, still preoccupied with classic themes, has not changed apace. Much of the current analysis of informality, we saw, has a timeless quality. One school sees the relation between the formal and informal sectors as a continual battle between large and small firms, with the victor using the tax code and property laws to its own advantage against the other. But recent research rejects this view: The laws are often not enforced; the size distribution of firms doesn't bunch where it would if they were; and the many “in-between” firms—at the border between the formal and informal sectors—regularly reported in diverse developing economies is inconsistent with the view that the law (or any other mechanism, for that matter) rigorously sorts firms into formal and informal sectors.

The structuralist view developed by Banerjee and Duflo focuses instead on the classic problem of poverty traps. The explanation is that firms above, but not far from, the subsistence level encounter a non-convexity in their growth path: cumulative returns from the cheap, but low-productivity, production set up with which they begin cannot finance the lumpy investment in the high productivity set up they need to advance. Only the very most energetic and ingenious entrepreneurs devise a way to traverse, by incremental steps, the canyon that separates the two. Their seldom success is the exception that proves the rule of structural limits to growth.

The structuralist view brings us closer to the mark. Clearing the quality hurdle does require a (very) lumpy investment beyond the reach of almost any firm acting alone. In this sense, it is a structural barrier. But the very generality that makes the approach

conceptually appealing for poverty traps, severely limits its utility as an explanation of the distinctive problems characteristic of the transition to the dynamic sector in particular.

At bottom the structural view restates a tautology: If there were not some obstacle to continuing increase of productivity by incremental investments, firms that escaped subsistence would have an unblocked path to the dynamic sector. Informality would be a residual phenomenon. The non-convexity of the growth path and the lumpy investment it implies are names for the obstacle, whether it involves increasing the size of a cattle herd to permit migration in case of drought or switching from self employment to managing others.

Getting from awareness of this very general obstacle to better understanding of the difficulties routinely encountered in the transition to the dynamic sector—and from there to some purchase on what to do about them—is, however, itself a demanding task. The non-convexity framework by itself offers little guidance for this.

The evolution of Banerjee and Duflo's recent work on gung-ho entrepreneurs illustrates the difficulty. Their starting point was anecdotal evidence of a few, exceptional entrepreneurs whose success cast into relief the typical failures of normal, rational actors. Then came the discovery that, in Hyderabad, a previously overlooked background factor—prior experience as an entrepreneur—is an indicator of the surprisingly widespread diffusion of supra-normal (though not super-human) capacities, suggesting that structural barriers may be less daunting than supposed. Micro finance, for instance, is used to good effect by the seasoned entrepreneurs, but not by those who reluctantly start a business for want of an alternative.

It is hard to know what kind of conclusions—about the prerequisites of entrepreneurial success? about good uses of micro finance? about the limits of structural barriers to development?—to draw from this succession of accounts. And it is even less clear how such lessons bear on entrepreneurial behavior in the vicinity of the quality hurdle. The risk is that the structuralist view, in providing the canopy of a general and incisive characterization of poverty traps, encourages a shade garden of empirical studies of constraints that neither improve the original conceptualization, nor guide research and policy in areas that are, under current conditions, of vital interest.

The approach here has been, instead, to look to the middle range of generality, between conceptualization of poverty traps and case studies of firms facing structural obstacles: to the quality hurdle as the current, recurring obstacle to entering the dynamic sector. And to the strategies actors deploy to clear it.

Our central finding is that crossing the quality hurdle is so difficult and risky that firms, at least in the agricultural settings where we walked around, seldom attempt it alone. In contrast to what the poverty trap view would suggest, the decision to proceed is normally not taken firm by firm, each weighing the costs and benefits of a large investment. Rather, a group of potential suppliers, often together with an eventual

buyer, jointly decide to cooperate to reduce the costs of acquiring new capacities, in the (more or less) confident hope that many of the small firms will successfully reshape production.

The logic of the joint decision is straightforward. Clearing the quality hurdle requires firms to develop the capacity for self-monitoring and self-correction. This capacity undergirds the ability to meet quality and reliability standards; it is synonymous with the capacity for continuous improvement. But in acquiring this capacity a firm exposes itself to intrusive and continuing external control at odds with traditional ideas of proprietorship or self-management. The risk of failure—especially failure in public—is great enough that many firms will decide to not try to cross the hurdle at all, and invest instead in horizontal expansion of a current activity or diversification into new ones.

Anticipating this reaction, buyers—particularly those dependent on cooperation with small firms to expand their capacity—offer technical and other support to candidate suppliers. Support can extend to achieving certification under global standards. Alternatively, but more often as a complement to cooperation with the buyer than as a substitute for it, the small firms form associations among themselves to reduce learning costs and to assure—as a group—that each member can meet its delivery obligations. In yet another variant the small firms join cooperatives for these purposes. Crossing the quality hurdle is, in short, a group activity.

In further confirmation of the challenges posed by clearing the hurdle, the disciplines imposed in the buyer support and cooperative regimes are strikingly similar. Both involve probationary periods of years—not months—during which candidate suppliers are regularly observed and evaluated. Acquiring a fundamental new capacity is not equivalent to purchasing a new piece of machinery or other investment good off-the-shelf. It involves rewiring production with all the uncertainty this entails. It is a daunting risk, typically beyond the reach of a single small firm, but manageable if potential suppliers and buyers cooperate.

That if is, finally, of great policy significance. We saw that big or medium-sized firms provide support services, if it is in their interest to do so. Cooperatives and associations likewise form when favorable circumstances align. The question for policy, and the practical challenge for institution building, is what to do when the benefits to society of including in-between firms in the dynamic sector exceed the gains to buyers and sellers eying each other across the quality hurdle. What to do, in other words, when there are possibly large—even very large—positive externalities, measured in gains in social, political and economic inclusion, not captured in the investment decisions of isolated actors, even in small groups. As dualism in its new form expands, and the vision of growth through industrialization dwindles to the strategic hope of a bygone age, that question and challenge command attention.

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